

I felt extremely anxious to ascertain whether this anomalous condition would present an insurmountable barrier to the rectification of the occiput, even by operation.

After long persuasion, Mrs. M. consented to let me make the attempt, provided it could be done without cutting. (For this proviso, I now feel thankful, as will be exhibited by a class of cases yet to be related.)

I ran a short, stout, narrow-bladed knife between the bones on the left side, about an inch from the posterior fontanelle, its point resting on the edge of the occiput; and making a lever of it, the edge of the parietal acting as the fulcrum, the occiput was prized out from under the parietal, and made gently to overlap it; but it instantly returned to its old position, by withdrawing the lever. I again prized it out, but it slipped back in like manner. I then prized it out, and had forcible pressure made on the edge of the parietal, so as to prevent its return, till I could in the same way prize it out along the right side; after which, the bone would remain in its proper position while the body was laid on the side; but would immediately return to its old place by laying it on the back. Thus proving, pretty clearly, that the child's life might have been saved, by a timely surgical operation.

It is very desirable to determine what cases will require surgical interference; and particularly, to determine how long we may safely wait, before we ought to resort to it. Life will occasionally depend upon the decision.

I would lay it down as a general rule, that, if the bones of the head were remarkably well ossified, if the occiput seemed to be immovably impacted under, and between the edges of the parietal bones, and then, if a *proper* lateral decubitus, persevered in for three or four hours, did not relieve or greatly ameliorate the prominent symptoms, I would feel no hesitation in resorting to Professor Harrison's operation (or a modification of it), for elevating the depressed bone.

We shall continue the consideration of this subject in a future number of this Journal.

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ART. V.—*On the Causes operative in determining the Proportions of the Sexes at Birth.* By GOUVERNEUR EMERSON, M. D.

In an article published in the American Journal of the Medical Sciences, (Nov., 1831,) we gave some results of statistical investigations into the births which had taken place in Philadelphia during the ten years embraced between 1821 and 1830. In viewing our tabular statements at that time, we were struck by the variations observed from year to year, not only in the totals, but in the proportions of the sexes. We entered into some investigations with the view of ascertaining whether influences might be detected in our locality affecting conceptions. This had been recently done in regard to Paris, by M. Villermé, and the results we arrived at were in singular accordance with his, showing that the population of Philadelphia was subjected to agencies tending to operate unfavorably upon its increase from

reproduction. We regarded these as chiefly dependent upon the prevalence of extreme heat, in summer, and the insalubrity of the first months of autumn.

Whilst recently engaged in making out another series of tables showing the vital statistics of Philadelphia, for the decennial period embracing the years between 1830 and 1840, we had our attention drawn to a new fact connected with the mystery of reproduction.\*

In a table exhibiting the births during the ten years, one of the columns shows the excess of males over the females for each year. In passing the eye down this column, we were surprised to find the amount for 1833, reduced to only 38, whereas, in the preceding year, it had been 415, and generally, the preponderance of male over female births amounted to several hundreds per annum, being 6.29 per cent. for the whole decennial period. The total of births during the year 1833, was greater than that of the preceding year. Supposing that some error might exist in the calculations for this year, we consulted the original records at the Health Office, and satisfied ourselves that the computations had been correctly made.

In estimating the births for the months of April and May, 1833, we found that the males amounted to 532, and the females to 590, showing a *female* excess of 58, or about 10 per cent. Now these months include a period nine months after the time when the cholera prevailed, namely, August and September, 1832. It must be borne in mind that the ordinary average excess of male births, ascertained by former calculations, amounts to about 7 per cent., so that the diminution of male conceptions during the cholera, was at the rate of more than 17 per cent.

The effects of this epidemic upon the animal economy were not limited to those wrought through the disease alone; but included many strong moral and depressing influences exerted during most of the year, embracing the painful periods of anticipation and presence of the epidemic, with the secondary effects of the meagre diet generally adopted.

The amount of conceptions during six months subsequent to the commencement of the cholera, exhibit a preponderance of females.

		Males.	Females.
Thus, the conceptions in August 1832, as shown by			
the births in April 1833, were		272	286
The conceptions in September 1832, by the births of May 1833, were		260	304
"	October 1832, "	285	283
"	November 1832, "	304	296
"	December 1832, "	361	330
"	January 1833, "	344	352
		1826	1851

\* We should, perhaps, limit this remark to reproduction so far as the human species is concerned, for we are aware that experimental observations have shown that with sheep and some other inferior animals, certain measures pursued in coupling have appeared to exert an influence in determining the sexes.

It is proper to state that a slight visitation of epidemic cholera occurred in 1834, chiefly in the month of October, and that the returns of births which took place in June 1835, show a considerable falling off in the male births, which, instead of 7, amounted to only about 4 per cent. To all who have a distinct recollection of the two occurrences, it must be well known, that the solicitude and other depressing agencies operated in a trifling degree, compared with what they did in the first visitation.\*

In looking abroad to see whether any corroboration of the casual observation made in Philadelphia was furnished by other places where cholera had prevailed, in the absence of the necessary data in our own country, we appealed to the ample and accurate records of Paris, where, as is well known, the malignant cholera committed great ravages in 1832. Here we found, in a mass of no less than 33,367 births, a similar reduction in the proportion of the males, discovered in the Philadelphia reports. In addition to the confirmation of the singular fact thus furnished, the distinction made in Paris between the legitimate and illegitimate births, furnishes other evidence of a highly interesting nature, as will be perceived from the following statements.

\* The births in Philadelphia, for each of the 21 years in which a registration has been kept, with the proportions of the sexes, and excess of males, are as follows:

	Males.	Females.	Totals.	Excess of male births.
1820(a)	1709	1501	3210	208
1821	2630	2417	5047	213
1822	3021	2701	5722	320
1823	2977	2836	5813	141
1824	3062	2771	5833	291
1825	3444	3181	6626	262
1826	3526	3219	6745	307
1827	3581	3452	7033	129
1828	3694	3506	7200	188
1829	3638	3357	6995	281
1830	3996	3632	7628	364
1831	3787	3555	7342	232
1832	3834	3419	7253	415
1833	3840	3802	7642	38
1834	3937	3635	7572	302
1835	4041	3815	7856	226
1836	3864	3544	7408	320
1837	4235	3953	8188	282
1838	3982	3798	7780	184
1839	3769	3493	7262	276
1840	4223	4010	8233	213

(a) Only nine months of this year are included in the returns.

An estimate of the births in Paris for 1832, gives of

	Males.	Females.	Total.
Legitimates, - - -	11,288	10,557	21,845
Illegitimates, - - -	5,032	4,853	9,885
	<hr/> 16,320	<hr/> 15,410	<hr/> 31,730
	15,410		
	<hr/> 910		

Taking the returns for the whole year 1832, the legitimate males exceed the females about  $6\frac{1}{2}$  per cent., whilst the male excess with the illegitimate was about  $3\frac{1}{2}$  per cent.

When, however, the births are computed for December alone, that is to say, the ninth month after the most fatal ravages of the cholera, we find the excess of males entirely lost, and, instead, a considerable female preponderance. Thus:

	Males.	Females.	Total.
The legitimates were, - - -	645	679	1324
The illegitimates, - - -	200	199	399
	<hr/> 845	<hr/> 878	<hr/> 1723

The births in Paris during 1833 were as follows :

	Totals.	
Males, legitimate, - - - -	11,852	} 16,891 Males.
Do. illegitimate, - - - -	5,039	
Females, legitimate, - - - -	11,434	} 16,476 Females.
Do. illegitimate, - - - -	5,042	
Excess of male births, - - - -	<hr/> 415	

Of the grand total of births in Paris for 1833, the legitimate constitute 23,286, of which there were 11,852 males, and 11,434 females, showing an excess of males of only  $3\frac{1}{2}$  per cent. The number of these born at home is 22,861, viz., 11,642 males, 11,219 females; showing an excess of males of about  $3\frac{1}{2}$  per cent.

The legitimate births in hospitals were 425, of which 209 were males, and 215 females, giving a small female excess of the legitimate births in hospitals.

Now the portion of the population upon which the cholera of 1832 bore hardest, was unquestionably that made up of the *lower* classes—the same which furnishes most of the illegitimate births, and in which, immediately after the cholera, we find the usual male preponderance annihilated, and a small *excess of female births*.

In France, and elsewhere in Europe, it has been ascertained that the excess of male births is always less among the natural-born than with the legitimate. The results of estimates based upon a long series of annual observations in Paris, show that with the children born out of wedlock, the

proportion of males to females is as 23 to 22, an excess of males of only about 4 per cent. Among the legitimate births, there are 16 males to 15 females, or a male excess of about 6 per cent.

When we consider the Paris births in 1833, with regard to the particular arrondissements, as indicating the parts inhabited by the rich, who were nearly exempt from cholera, and the poor who perished by thousands, we find the following results.

In the 1st, 2d, 3d and 4th arrondissements, comprising the most populous and wealthy portion of the city, the total number of births was 6,664, of which 3,458 were males, and 3,206 females, being an excess in the males of nearly  $7\frac{1}{2}$  per cent.

The legitimate births at home, representing that portion of the population best provided for, were 5,126, viz., 2,666 males, and 2,460 females, showing a male excess of about  $7\frac{1}{4}$  per cent.

The illegitimate births at home amounted to 1511, viz., 779 males, and 732 females, showing a male excess of 6 per cent.

The births in the hospitals were so few as to make no sensible change in the results given.

Let us now go to those parts of Paris where the cholera prevailed with such fatal fury, that, between the 26th of March and 18th of April, 1832, it swept off no less than 10,476 victims, the number of persons attacked being estimated at 30,000, not including the milder cases.

These were the ill-ventilated districts embraced in the 8th, 9th, 10th and 12th arrondissements, where the poor and necessitous most abound.

The total of legitimate births at home was 6155, viz., 3137 males, and 3028 females, a male excess of about  $3\frac{1}{4}$  per cent.

The legitimate births in hospitals were 301, viz., 179 males, and 188 females, a female excess of about 5 per cent.

The whole number of the illegitimate was 5617, viz., 2801 males, and 2816 females, showing a female excess of 15. Of these,

The illegitimate births at home were 1622, viz., 815 males, and 807 females, being a male excess of less than 1 per cent.

The illegitimate births at the hospitals were 3995, viz., 1986 males, and 2009 females, showing a female excess of 23.

The total amount of legitimate and illegitimate births in the 8th, 9th, 10th and 12th arrondissements was 12,139, of which the males were 6117, and the females 6022, showing a male excess of only about  $1\frac{1}{2}$  per cent.

But it was in the 12th arrondissement that the greatest ravages of cholera were felt; and the births in this constitute about half of those reported for the 8th, 9th, 10th and 12th arrondissements, namely, 6134, of which 3046 were males, and 3088 females.

Among the legitimates born at home, in this arrondissement, amounting to 1599, the males were 793, the females 806. The illegitimate births in

hospitals were 3779, viz., 1860 males, and 1919 females, a female excess of 59.

Thus we find that, in the portions of Paris exempt from cholera in 1832, the births in 1833 show the unusually large excess of males of  $7\frac{1}{2}$  to  $7\frac{3}{4}$  per cent. Even among the illegitimate births, the male excess was swelled to 6 per cent. But in those parts of Paris which bore the brunt of the cholera, the male excess with the legitimate was reduced to  $3\frac{1}{2}$  per cent., whilst, with the illegitimate, the female births actually preponderated.\*

The reports we possess only show the Paris births in each arrondissement for the entire year, the monthly statements including the whole of the arrondissements. We are thus prevented from exhibiting the effects of the influences under investigation, as they operated in particular months in the separate arrondissements. This last, could it have been effected, would have been highly interesting.

An attentive inspection of the very extensive reports made in several of the most enlightened countries of Europe, has proved to us most conclusively, that every influence operating in a community to maintain a high state of physical health and energy, leads to an increase in the proportion of male births; whilst, on the contrary, every agency, whether moral or physical, the effect of which may be to reduce the forces of organic life, will diminish such preponderance. In many parts of Europe, where the general population is over-worked and under-fed, the excess of male births is very small. Throughout Prussia and France, the excess of male legitimate births is usually under 6 per cent., and in England about 5 per cent. for the kingdom at large. In Philadelphia, where the condition of the general population is so favourable, the male births generally exceed the female about 7 per cent., whilst, in the rural districts of the United States, and especially in those most newly settled, the predominance of male children is much greater.†

M. Quetelet, of Brussels, who has devoted much attention to subjects connected with the movements of population, in the course of one of his late most elaborate expositions, makes the following observation: "Il est

\* Viewed in point of numbers, the Paris births in 1832 exhibit a considerable diminution, amounting to about 5 per cent. less than the number reported in 1833. In the monthly returns, the falling off first manifests itself in August, 1832, and continues to February, 1833, from which it would seem that influences unfavourable to reproduction set in about the month of December, 1831, and continued till May, 1832, a space of about six months, including the period when the cholera prevailed. About nine months afterwards, in 1833, the births experienced a sudden increase from 2053 to 2569. This seems to show that, about the month of June, 1832, there was a subsidence of the influences unfavourable to reproduction, which had been prevailing for some six months, followed by a restoration to extraordinary vigour, causing the male excess for the whole year to rise to 6,  $7\frac{1}{2}$ , and even  $7\frac{3}{4}$  per cent, according to the classes of Parisian population.

† See American Journal of the Medical Sciences for Nov. 1827.

un fait remarquable, bien établi aujourd'hui quoiqu'on n'en connaisse point encore les causes, c'est qu'il naît annuellement plus de garçons que de filles."

We have not the presumption to attempt an explanation of the great primary law regulating the distribution of the sexes. But, at the same time, we believe that the facts just adduced, and others to which we shall refer, show causes—and some of these, more or less under human control—which operate in a very appreciable degree in determining the proportions of males and females in the human race.

Disease, exhausting labour, scanty and meagre diet, impure air, intemperance and other social evils, are depressing influences, the force of most of which bears much more heavily upon the inhabitants of cities than upon those of places less densely populated.

An examination of the returns made for many years in France, Belgium and England, embracing millions of births, shows everywhere a greater excess of males born in the rural population than in cities.\* Here, then, are causes specified and always existing, which exert a decided influence in determining the proportions of the sexes born. When, however, we come to estimate the influence exerted upon large masses of people subjected to a pestilence singularly calculated to exhaust the physical energies, we view the subject as if placed in the focus of a magnifier. The depressing forces ordinarily existing we find capable of diminishing the males one or two per cent., whilst those exerted by a severe epidemic, like that experienced in Paris and Philadelphia, have brought down the ordinary male excess of about 6 or 7 per cent. to only 1 per cent. When the estimate is made so as to include the births in Philadelphia for the months of April and May, 1833, the conceptions of which took place in July and August, 1832, as well as the illegitimate births of Paris, we actually see the usual male excess annihilated and substituted by a female preponderance.

To exhibit this subject in a still stronger light, let us take the sum of male excess, and instead of comparing it with the whole amount of male births, consider it by itself. Suppose the sum of 400 to represent the excess of males in 10,000 city births, and 600 the excess of males in the same

\* Observations collected in England of late years, and published in detail in the annual reports of the Registrar-General, show the preponderance of male births greatest in the northern and western divisions, including Wales; and it is precisely here where we should expect the powers of organic life manifested in a higher degree than in the southern divisions of the island, the seats of the metropolitan cities, where more ease, luxury, and effeminacy exist. In the *American Journal of the Medical Sciences* for January, 1844, p. 167, will be found an abstract from a report of the British Registrar-General for three years, during which there was a registration of the birth of 760,983 boys, and 725,689 girls. The excess of males in all the districts is 4.86 per cent., or in the proportion of 10,486 boys to 10,000 girls. In the northern and western divisions, the excess of boys amounts to 5.39 per cent, whilst in the southern and metropolitan districts, the males at birth exceed the females but 4.35 per cent.

number of country births. The excess of males in the first-named districts would, therefore, be 33 per cent., or one-third less than that in the more rural districts, and this under circumstances ordinarily existing. But when the agencies exerted by the prevalence of a severe epidemic like the cholera, are brought to bear upon the population, the male excess sinks about 80 per cent. below the ordinary average.

I believe it will be found that the extensive prevalence of every severe zymotic epidemic, or endemic disease; every occurrence, in fact, which exerts, either directly or indirectly, a decided depressing effect upon a community, will be indicated in the record of births by a conspicuous reduction in the proportion of males.

In our table showing the births in Philadelphia, there is a perceptible falling off in the preponderance of males, for the years 1837 and 1838.— This may, perhaps, be ascribed to the destruction of business and embarrassment so generally experienced, and which commenced in 1836. The intense anxiety and great distress which prevailed and was kept up for some years after the financial crisis, must certainly have operated strongly upon a large commercial and manufacturing community, and, like all other depressing influences, tended, by indirect means, to diminish the energies of organic life.

When a pestilence or violent epidemic passes through a community, it is generally the most feeble portion of the population that is swept off. The births soon after will exhibit an increase in the amount of males, because the parents will be those endowed with vital energies above the ordinary average, a proof of which is their exemption, or recovery, from disease.

We think there is strong reason to believe, that the institution of polygamy grew out of a preponderance in the amount of female population, induced, perhaps, by a scanty supply of food, or from the use of a description of diet not calculated to maintain a high condition of physical energy. Polygamy once established as a common usage, must tend to foster itself.

In conclusion, it appears to us that the proportions of the sexes at birth are, to a considerable extent, subjected to circumstances more or less under human control, and that all measures tending to lessen disease, and promote the welfare and comfort of a population, while they serve immediately to increase the capacities for profitable labour, tend also to promote the multiplication of the sex supplying the main physical power.